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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

LI, SHI K

ART UNIT	PAPER NUMBER
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2613

NOTIFICATION DATE	DELIVERY MODE
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05/10/2007

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary	Application No.	Applicant(s)	
	10/655,222	NAGURA ET AL.	
	Examiner	Art Unit	
	Shi K. Li	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 February 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over admission (admitted prior art) in view of Okuyama et al. (U.S. Patent 6,256,390 B1) and Bennett (U.S. Patent 2002/0152341 A1).

Regarding claims 1 and 8, admission (e.g., FIG. 5, Prior Art) teaches a plurality of ports for transmitting and/or receiving one or more signals substantially as defined at IEEE 1394 (blocks 306 and 307 have output connectors with external connection) and at least one of the ports being for transmitting and/or receiving one or more optical signals (307 supports optical transmission and/or reception and 306 supports electrical transmission and/or reception). The difference between admission and the claimed invention is that admission does not teach one or more protocol conversion means for carrying out signal transmission protocol conversion at a physical-layer level. Okuyama et al. teaches one or more protocol conversion means for carrying out signal transmission protocol conversion at a physical-layer level (5, 8, 17 in figure 1, block 17 converts formats DV, MPEG and others and blocks 5 and 8 show specifically conversion between DV and MPEG formats). One of ordinary skill in the art would have been motivated to combine the teaching of Okuyama et al. with the apparatus of admission because it allows copying from the same source into devices that support different medium formats. Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to use the multiple format conversion firmware taught by Okuyama et al. in the multiple port IEEE 1394

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compliant apparatus taught by the admitted prior art because it would make it more flexible and capable of communicating several other formats.

The combination of admission and Okuyama et al. still does not teach one or more bus management means co-manages one or more signal buses which are respectively connected externally to at least a portion Of the plurality of ports. Bennett teaches one or more bus management means co-manages one or more signal buses which are respectively connected externally to at least a portion of the plurality of ports (16 in figure 1). Thus it would have been obvious to one of ordinary skill in the art at the time of the invention to add the bus manager taught by Bennett in the modified apparatus of admission and Okuyama et al. because it would provide very high performance serial bus.

Regarding claims 2-3, Okuyama et al. teaches protocol conversion means carries out signal transmission protocol conversion at an application level (figures 2, 3, 5, 6 etc show how data packets and frames are rearranged and broken down for file transfer; and all of this is dealt with at an application level). In particular, Okuyama et al. teaches application-level protocol conversion means carries out conversion between or among one or more DV-format signal transmission protocols and one or more MPEG-2TS-format signal transmission protocols (column 14, lines 66-67, teaches conversion of DVC and DVD format or simply D format and also column 16, line 301 MPEG-2TS format).

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over admission, Okuyama et al. and Bennett as applied to claims 1-3 and 8 above, and further in view of Akune (5,831,565).

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Admission, Okuyama et al. and Bennett have been discussed above in regard to claims 1-3 and 8. The difference between admission, Okuyama et al. and Bennett and the claimed invention is that admission, Okuyama et al. and Bennett do not teach an application-level protocol conversion means carries out conversion between or among one or more 1-bit audio signal transmission protocols and one or more multi-bit audio signal transmission protocols. Akune teaches an apparatus, wherein at least one of the application-level protocol conversion means carries out conversion between or among one or more 1-bit audio signal transmission protocols and one or more multi-bit audio signal transmission protocols (column 2, lines 8-10). One of ordinary skill in the art would have been motivated to combine the teaching of Akune with the modified apparatus of Admission, Okuyama et al. and Bennett because the approach suppresses quantizing distortion. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use bit conversion feature, as taught by Akune, in the modified apparatus of Admission, Okuyama et al. and Bennett because it would make the conversion high-efficient (column 2, line 16).

4. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Admission, Okuyama et al., Bennett and Akune as applied to claim 4 above, and further in view of Kojo et al. (20040033057).

Admission, Okuyama et al., Bennett and Akune have been discussed above in regard to claim 4. The difference between Admission, Okuyama et al., Bennett and Akune and the claimed invention is that Admission, Okuyama et al., Bennett and Akune do not teach a multi-bit audio signal transmission protocol as defined at IEC 60958. Kojo et al. teaches the apparatus, wherein at least one of the multi-bit audio signal transmission protocol or protocols is

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substantially as defined at IEC 60958 (between block 1 and 11, the data transmitted is IEC 60958 compliant). One of ordinary skill in the art would have been motivated to combine the teaching of Kojo et al. with the modified apparatus of Admission, Okuyama et al., Bennett and Akune because IEC 60958 is a widely accepted digital audio format and supported by a lot of commercial products (e.g., the Sony/Philips Digital Interface Format is based on IEC 60958). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to support IEC 60958, in addition to other audio formats, as taught by Kojo et al., in the modified apparatus of Admission, Okuyama et al., Bennett and Akune because IEC 60958 is a widely accepted digital audio format.

5. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Admission, Okuyama et al., Bennett and Akune as applied to claim 4 above, and further in view of Wong et al. (6,466,476).

Admission, Okuyama et al., Bennett and Akune have been discussed above in regard to claim 4. The difference between Admission, Okuyama et al., Bennett and Akune and the claimed invention is that Admission, Okuyama et al., Bennett and Akune do not teach MPEG Audio Layer-3 format. Wong et al. teaches the apparatus, wherein at least one of the multi-bit audio signal transmission protocol or protocols is substantially as defined at MPEG Audio Layer-3 (Figure 3 shows an example of a data frame according to MPEG Audio Layer-3 standard, column 6, lines 32 - 48 supports the multi bit MP3 signal). One of ordinary skill in the art would have been motivated to combine the teaching of Wong et al. with the modified apparatus of Admission, Okuyama et al., Bennett and Akune because a lot of commercial products use the MP3 format (e.g., Apple Computer launched iPod in October 2001). Thus it

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would have been obvious to one of ordinary skill in the art at the time the invention was made to support the MP3 format, as taught by Wong et al., in the modified apparatus of Admission, Okuyama et al., Bennett and Akune because a lot of commercial products use the MP3 format.

6. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over admission, Okuyama et al. and Bennett as applied to claims 1-3 and 8 above, and further in view of Smith (20020000831).

Admission, Okuyama et al. and Bennett have been discussed above in regard to claims 1-3 and 8. The difference between admission, Okuyama et al. and Bennett and the claimed invention is that admission, Okuyama et al. and Bennett do not teach that one or more of the application-level protocol conversion means take the form of one or more replaceable modules. However, using replaceable modules are well known in the art. For example, Smith teaches a replaceable module (page 3, paragraph 0036, "removable module"). One of ordinary skill in the art would have been motivated to combine the teaching of Smith with the modified apparatus of Admission, Okuyama et al. and Bennett because using replaceable modules allows a user to customize the apparatus such that each user only need to purchase and install modules that are needed. It also allows new modules to be developed and installed later. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to implement protocol conversion as replaceable modules, as taught by Smith, in the modified apparatus of Admission, Okuyama et al. and Bennett because using replaceable modules allows a user to customize the apparatus such that each user only need to purchase and install modules that are needed. It also allows new modules to be developed and installed later.

Response to Arguments

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7. Applicant's arguments filed 16 February 2007 have been fully considered but they are not persuasive.

The Applicant argues that Bennett fails to disclose a bus management means that manages one or more signal buses that are respectively connected externally to at least a portion of the plurality of ports. The Examiner disagrees. First, the rejection is based on the combination of Admission, Okuyama et al. and Bennett. Okuyama et al. clearly teaches in FIG. 24 that IEEE 1394 bus is used for connected devices, each of which is external to the others. Furthermore, FIG. 5 of instant specification also teaches ports for connecting to external devices. Second, Bennett teaches in paragraph that discrete circuitry 30 is directly connected to one of the ports of the standard 1394 PHY chip. The other ports of the 1394 PHY chip are connected to 1394 connectors, as illustrated in FIG. 3. Bennett teaches in [0024], "As shown in FIG. 4, that nodes connected to the bus #2 represent the actual interconnected 1394 devices in the network." Therefore, each and every reference as well as the combination of these references teach or suggest that the 1394 bus is used to connect external devices to at least a portion of the plurality of ports.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (7:30 a.m. - 4:30 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

skl

4 May 2007



SHI K. LI
PRIMARY PATENT EXAMINER